leaflets (46 vs. 20%, p = 0.001) and moderate or severe mitral regurgitation (52 vs. 32%, p = 0.001) without significant age or sex differences.

Conclusions: TVP in association with MVP is infrequent, even in a referral population, and presents in patients with more severe myxomatous valve disease.

11:45

803-6 Enhanced Visualization of Intravascular Thrombus With the Use of a Thrombus Targeting Ultrasound Contrast Agent (MRX408): Evidence From *In Vivo* Experimental Echocardiographic Studies

M. Takeuchi, T.P. McCreary, E. Avelar, M. Sheahan, R. Connolly, A. Santanen, E. Unger, N. Pandian. *Tufts – New England Medical Center, Boston, Mass, USA*

Background: Detection of intravascular thrombus (IVT) is not always easy by conventional ultrasound imaging. We explored the potential of a new contrast agent *targeted* to thrombus (MRX408) using a lipid synthesized with a targeting moiety that is an RGD analog in the evaluation of *in vivo* IVT.

Methods: We created intravascular thrombus (IVT) by inserting thrombin soaked cotton threads into the inferior vena cava (IVC) in 9 dogs. With a commercially available 2-D echocardiographic system, we recorded images of the IVC at baseline with no contrast agent, during continuous infusion of MRX113 (a *nontargeted* contrast agent as a control) and infusion of *targeted* agent, MRX408. Videointensity (VI, unitless) and the size of IVT (area) were analyzed blindly. Presence of IVT was verified by autopsy.

Results: In all instances of IVT, efficient binding by the agent MRX408 and visually apparent increase in ultrasound contrast enhancement were noted. VI of IVT was not different between baseline and MRX113 (40.0 ± 14.6 and 73.9 ± 41.3, p = ns) but was higher during MRX408 infusion (105.7 ± 47.8, p < 0.05 vs. Baseline and vs MRX113). The maximum area of IVT was similar during baseline and MRX 113 (p = ns) but was found to be larger during MRX408 infusion by >41 ± 9% and >34 ± 14%, (P < 0.01 for each).

Conclusion: The tissue targeted contrast agent, MRX408 enhances the visualization of IVC thrombus. It has the potential to improve the diagnostic power for detecting and delineating intravascular thrombus, even when a conventional ultrasound imaging modality is employed.

804 Interventional Cardiology in Congenital Heart Disease

Monday, March 30, 1998, 10:30 a.m.–Noon
Georgia World Congress Center, Room 365W

10:30

804-1 US/International Multicenter Trial of Atrial Septal Catheter Closure Using the Amplatzer Septal Occluder: Initial Results

J. Masura, P.E. Lange, J.L. Wilkinson, H.H. Kramer, M. Alwi, Y. Goussous, B. Thanopulos, K.P. Walsh, Z.M. Hijazi. *For the Amplatzer Investigators, The Children's University Hospital, Bratislava, Slovak Republic and Tufts-New England Medical Center, Boston, MA, USA*

From 9/95-8/97, 229 patients with secundum atrial septal defect, 11 with patent foramen ovale and associated stroke and 3 with fenestrated Fontan underwent transcatheter closure using the new self-centering, repositionable Amplatzer™ Septal Occluder (ASO) at a median age of 6.6 yr (0.9–70 yr) and median weight of 22 kg (6.5–120 kg). The median size of the defect by 2D TEE was 12 mm (2–23 mm) and the median balloon stretched diameter was 15 mm (3–26 mm). The median size of the device (size of connecting waist between the two disks) used to close the defect was 15 mm (4–26 mm). In few patients, both disks of the device were inadvertently opened either in the left or right atrium, because of the ability of repositioning the device, eventually all patients had correct device deployment. The median fluoroscopy time was 16 min. (2.3–64 min.) and median total procedure time was 90 min. (27–139 min.). Complications included were 2 device embolization to the RV with successful catheter retrieval and 1 endocarditis necessitating device removal and 1 with transient ischemic attack. At 24 hours by color Doppler, 74% of patients had complete (C) closure, 15% had trivial residual shunt (TS) and 6% had small residual shunt (SS). At one month follow-up by color Doppler, 91% of patients had C and 4.6% had TS and 2.8% had SS. No episodes of wire fracture or disruption. We conclude that the new ASO is safe and effective in completely closing most atrial communications.

10:45

804-2 Simultaneously Implanted "Crisscrossing" Stents Provide Excellent Relief for Postoperative Bilateral Proximal Pulmonary Artery Stenoses With Closely Related Ostia

T.M. Zellers, C.E. Mullins, M.R. Nihill, R.G. Grifka, F.F. Ing. *Baylor College of Medicine and Texas Children's Hospital, Houston, TX, USA*

Background: For patients with postoperative pulmonary artery stenoses, expandable intravascular stent placement is the treatment of choice. However, patients with postoperative bilateral proximal pulmonary artery stenoses (PBPPS), with closely related branch ostia, present a special problem as proximal stent implantation may compromise access to the contralateral pulmonary artery. We hypothesized that simultaneously implanted crisscrossing stents (SIXS) would be safe, would improve hemodynamics and allow future access to both pulmonary arteries.

Methods: Twenty patients (15 M; 8.9 ± 6.9 yo; 5.6 ± 4.2 y post-op) with PBPPS, with (n = 9) and without MPA stenosis, had SIXS between 1993 and 1997. The principal diagnoses were dTGA (5), TOF (7), PA-VSD (4), Truncus (2) and AS/Ross procedure (1). We examined the change in RV:FA ratios, PA size and gradients, and branch angle with SIXS.

Results: Hemodynamics and vessel size improved significantly with SIXS (table), but branch angles were not significantly changed.

	Ratio RV:FA	Gradients (mmHg)			Vessel size (mm)	
		MPA-LPA	MPA-RPA	MPA	LPA	RPA
Pre-stent	0.73 ± 0.21	41.6 ± 28.1	44.5 ± 28.8	14.2 ± 6.3	5.9 ± 2.0	6.7 ± 2.0
Post-stent	0.39 ± 0.12	9.4 ± 7.1	9.9 ± 8.1	19.2 ± 3.8	13.3 ± 2.6	13.1 ± 2.4

Conclusions: SIXS provides excellent relief for postoperative PBPPS while maintaining access to both PAs and should be considered an excellent treatment choice for this problem.

11:00

804-3 Application of Endovascular Stents on the Management of Right Ventricular to Pulmonary Artery Conduit Stenosis

C. Ovaert, C.A. Caldarone, B.W. McCrindle, D. Nykanen, R.M. Freedom, L.N. Benson. *The Hospital for Sick Children, University of Toronto, Toronto, Canada*

Background: Extracardiac conduits between the RV and pulmonary arteries commit patients to multiple reoperations. Endovascular stenting of a stenotic conduit may delay reoperation.

Methods: From 7/90 to 5/97, 42 patients underwent transcatheter stent insertion to relieve RV conduit stenosis. Median age at procedure was 5.9 yrs (range, 6 mo- 17 yrs), with a median interval from conduit insertion of 2.4 yrs (3 mo–13.9 yrs). Clinical, echo, hemodynamic, angiographic and follow-up data were obtained.

Results: RV systolic pressures decreased from 71 ± 18 mmHg to 48 ± 15 mmHg (p = 0.0001) after stent placement, with an increase in the minimal diameter of the conduit of 51 ± 44% (p = 0.0001). No major complications occurred. Eleven pts had 1 and 2 pts had 2 additional transcatheter interventions to further dilate the stent or add an additional stent. Surgical conduit replacement was required in 17 pts at a mean of 20 ± 16 mo after the stent placement. Of those without surgery, 12 pts have been followed <1 y, the remainder up to 5.4 yrs with 1 late death at 2.8 yrs after stent placement. Freedom from surgical intervention was 82% at 1 yr, 66% at 2 yr and 39% at 3 yr after stenting. There was no effect on freedom from surgery of pt age or duration of conduit at stenting, but higher initial RV pressures predicted decreased palliation, with a trend towards improved early results in the 2nd half of the study.

Conclusions: Transcatheter placement of endovascular stents in stenotic RV conduits significantly delays conduit replacement.

11:15

804-4 Management of Pulmonary Artery Trauma due to Balloon Dilation

C.M. Baker, F.X. McGowan, J.E. Lock, J.F. Keane. *The Children's Hospital, Boston, Massachusetts, USA*

Background: Balloon dilation (BD) of the pulmonary artery (PA) is important in the management of peripheral pulmonary stenosis. Successful BD requires a controlled tear of the PA, however complications ranging from small pseudoaneurysms to PA rupture can occur. We report our experience managing BD associated PA rupture.

Methods: All records (1983–1997) for patients undergoing cardiac catheterization during which BD of a PA was performed were reviewed using a com-